



COPY ORIGIN

TECH CENTER

AUG 16

RECEIVED

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)	Docket Number: AM-00102.P.1.1-US	Patent Number: 10 072,975
	Applicant: Efimov et al.	
	Filing Date: February 9, 2002	Group Art Unit: 1651

U.S. PATENT DOCUMENTS							
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB- CLASS	FILING DATE IF APPROPRI- ATE
<i>h</i>	P1	5,432,272	7 11 95	Brenner			
	P2	5,508,178	4 16 96	Rose <i>et al.</i>			
	P3	5,539,082	7 23 96	Nielsen <i>et al.</i>			
	P4	5,641,625	6 24 97	Ecker <i>et al.</i>			
	P5	5,656,461	8/12/97	Demers			
	P6	5,714,331	2/3/98	Buchardt <i>et al.</i>			
	P7	5,719,262	2/17/98	Buchardt <i>et al.</i>			
	P8	5,736,336	4 7 98	Buchardt <i>et al.</i>			
	P9	5,766,855	6 16 98	Buchardt <i>et al.</i>			
	P10	5,773,571	6 30 98	Nielson <i>et al.</i>			
	P11	5,786,461	7 28 98	Buchardt <i>et al.</i>			
	P12	5,837,459	11 17 98	Berg <i>et al.</i>			
	P13	5,861,250	1 19 99	Stanley <i>et al.</i>			
	P14	5,864,010	1 26 99	Cook <i>et al.</i>			
	P15	5,874,553	2 23 99	Peyman <i>et al.</i>			
	P16	5,888,733	3 30 99	Hyldig-Nielson <i>et al.</i>			
<i>h</i>	P17	5,932,711	8 3 99	Boles <i>et al.</i>			

Examiner Signature	<i>[Signature]</i>	Date Considered	10/7/03
-----------------------	--------------------	--------------------	---------

U.S. PATENT DOCUMENTS							
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	C I A SS	SUB- CLASS	FILING DATE IF APPROPRIATE
<i>u</i>	P18	5,972,610	10 26 99	Buchardt <i>et al.</i>			
	P19	5,977,296	11 2 99	Nielson <i>et al.</i>			
	P20	6,004,750	12 21 99	Frank-Kamenetskii <i>et al.</i>			
	P21	6,015,887	1 18 00	Teng			
	P22	6,020,124	2 1 00	Sorenson			
	P23	6,020,126	2 1 00	Carlsson <i>et al.</i>			
	P24	6,025,140	2 15 00	Langel <i>et al.</i>			
	P25	6,025,482	2 15 00	Cook <i>et al.</i>			
	P26	6,045,995	4/4 00	Cummins <i>et al.</i>			
	P27	6,060,242	5/9/00	Nielson <i>et al.</i>			
	P28	6,063,571	5/16/00	Uhlmann <i>et al.</i>			
	P29	6,107,470	8/22/00	Nielson <i>et al.</i>			
	P30	6,110,676	8 26 00	Coull <i>et al.</i>			
	P31	6,110,678	8 29 00	Weisburg <i>et al.</i>			
	P32	6,150,510	11/21/00	Seela <i>et al.</i>			
	P33	6,165,720	12 26 00	Felgner <i>et al.</i>			
<i>u</i>	P34	6,180,770	1/30/01	Boles <i>et al.</i>			

Examiner Signature		Date Considered	10/7/03
-----------------------	--	--------------------	---------

FOREIGN PATENT DOCUMENTS								
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	Translation	
							YES	NO
	F1	WO 92 002258	2 20 92					
	F2	WO 92 20702	11 26 92					
	F3	WO 93 10820	6 10 93					
	F4	WO 94 22892	10 13 94					
	F5	WO 94 24144	10 27 94					
	F6	WO 99 14266	3 25 99					
	F7	WO 00/56746	9 28 00					
	F8	WO 00/56748	9/28/00					
	F9	WO 00/56916	9/28/00					
	F10	WO 00/56920	9/28/00					

Examiner Signature	<i>[Signature]</i>	Date Considered	10/7/03
-----------------------	--------------------	--------------------	---------

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)		
EXAMINER INITIALS		CITATION
	D1	Adams et al., J. Am. Chem. Soc. 105:661-663 (1983)
	D2	Ausubel et al., Current Protocols in Molecular Biology, John Wiley and Sons (1998)
	D3	Beaucage and Caruthers, Tetrahedron Lett. 22:1859-1862 (1981)
	D4	Briepohl et al., Bioorg. & Med. Chem. Lett. 6:665 (1996)
	D5	Buchardt et al., PNAs and their Potential Applications in Biotechnology, Tibtech 11: 384-386 (1993)
	D6	Chandler et al., Affinity Capture and Recovery of DNA at Femtomolar Concentrations with PNA Probes, Analytical Biochemistry 283: 241-249 (2000)
	D7	Chow et al., Nucl. Acids Res 9:2807-2817 (1981)
	D8	Cochet et al., Selective PCR Amplification of Functional Immunoglobulin Light Chain from Hybridoma Containing the Anergic MOPC 21-Derived V κ by PNA-Mediated PCR Clamping, Biotechniques 26: 818-822 (1999)
	D9	Coste et al., Tetrahedron Lett. 31:669-672 (1990)
	D10	Crea and Horn, Nucl. Acids Res. 8:2331-2348 (1980)
	D11	Domling et al., A Novel Method to Highly Versatile Monomeric PNA Building Blocks by Multi Component Reactions, Bioorganic & Medicinal Chemistry Letters 9: 2871-2874 (1999)
	D12	Efimov et al., Nucl. Acids Res 11:8369-8387 (1983)
	D13	Efimov et al., Nucl. Acids Res. 13:3651-3666 (1985)
	D14	Efimov et al., Application of new catalytic phosphate protecting groups for the highly efficient phosphotriester oligonucleotide synthesis, Nucl. Acids Res. 14:6525-6540 (1986)
	D15	Efimov et al., Abstracts of Protein Engineering Symposium, Groningen, May 4-7, 1986, Groningen, The Netherlands, Drenth, ed. p.9 (1986)
	D16	Efimov et al., Collect. Czech. Chem. Commun. 61:S262-S264 (1996)

Examiner Signature		Date Considered	10/7/03
-----------------------	---	--------------------	---------

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)		
EXAMINER INITIALS		CITATION
	D17	Efimov et al., Bioorg. Khim. 24:696-709(1998)
	D18	Efimov et al., Synthesis and evaluation of some properties of chimeric oligomers containing PNA and phosphono-PNA residues, <i>Nucl. Acids Res.</i> 26:566-575 (1998)
	D19	Efimov et al., Synthesis of polyacrylamides N-substituted with PNA-like oligonucleotide mimics for molecular diagnostic applications, <i>Nucl. Acids Res.</i> 27:4416-4426 (1999)
	D20	Efimov et al., Peptide Nucleic Acids and Their Phosphonate Analogues: II. Synthesis and Physicochemical Properties of Hybrids Containing Serine and 4-Hydroxyproline Residues, <i>Russian Journal of Bioorganic Chemistry</i> 25:545-555 (1999)
	D21	Efimov et al., Polyacrylamide Conjugates with Oligonucleotides and Their Mimics for Diagnostics, <i>Russian Journal of Bioorganic Chemistry</i> 25:752-758 (1999)
	D22	Efimov et al., Phosphonate Analogues of Peptide Nucleic Acids and Related Compounds: Synthesis and Hybridization Properties, <i>Nucleosides & Nucleotides</i> 18:1393-1396 (1999)
	D23	Efimov et al., Novel Oligonucleotide Analogues Derived from Serine and 4-Hydroxyproline, <i>Nucleosides & Nucleotides</i> 18(6&7): 1425-1426 (1999)
	D24	Efimov et al., Polyester and N-Methyl Analogues of Peptide Nucleic Acids: Synthesis and Hybridization Properties, <i>Nucleosides & Nucleotides</i> 18(11&12): 2533-2549 (1999)
	D25	Efimov and Chakhmakhcheva, Solid Phase Synthesis of PNA-Like Oligonucleotide Mimics and their Use for Polyacrylamide-Based Molecular Diagnostic Assays, Shemyakin & Ovchinnikov Institute of Bioorganic Chemistry, 10 pgs.
	D26	Egholm et al., Peptide Nucleic Acids Oligonucleotide Analogues with an Achiral Backbone, <i>J. Am. Chem. Soc.</i> 114: 1895-1897 (1992)
	D27	Egholm et al., Recognition of Guanine and Adenine in DNA by Cytosine and Thymine Containing Peptide Nucleic Acids (PNA), <i>J. Am. Chem. Soc.</i> 114: 9677-9678 (1992)
	D28	Egholm et al., PNA Hybridizes to Complimentary Oligonucleotides Obeying the Watson-Crick Hydrogen-Bonding Rules, <i>Nature</i> 365: 566-568 (1993)

Examiner Signature		Date Considered	10/27/03
-----------------------	---	--------------------	----------

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)		
EXAMINER INITIALS		CITATION
	D29	Falkiewicz et al., Synthesis and Characterization of New PNA Monomers, Nucleic Acids Symposium Series 42: 29-30 (1999)
	D30	Fahrlander and Klausner, Amplifying DNA Probe Signals: A 'Christmas Tree' Approach, Biotechnology 6: 1165-1168 (1988)
	D31	Finn et al., Nucl. Acids Res. 24:3357-3364 (1996)
	D32	Froehler et al., J. Am. Chem. Soc. 107:278-279 (1985)
	D33	Gait et al., Nucl. Acids Res. 8:1081-1096 (1980)
	D34	Gait et al. Nucl. Acids Res. 10:6243-6254 (1982)
	D35	Gao et al., Tetrahedron Lett. 32:5477-5480 (1991)
	D36	Goodchild, J. Bioconjugate Chem. 1:165 (1990)
	D37	Harvey et al., Antisense and Antigene Properties of PNAs, Science 258: 1481-1485 (1992)
	D38	Harlowe and Lane, <u>Antibodies, a Laboratory Manual</u> , Cold Spring Harbor Press (1988)
	D39	Heinklein <i>et al.</i> in Girault and Andreu (eds.) The Peptides, 21 st European Peptide Symposium, ESCOM, Leiden pp. 67-77
	D40	Igloi, Automated Detection of Point Mutations by Electrophoresis in PNA-containing Gels, BioTechniques 27: 798-808 (1999)
	D41	Ishihara and Corey, Strand Invasion by DNA-Peptide Conjugates and Peptide Nucleic Acids, Nucleic Acids Symposium Series 42: 141-142 (1999)
	D42	Izvolisky et al., Sequence-Specific Protection of Duplex DNA against Restriction and Methylation Enzymes by Pseudocomplementary PNAs, Biochemistry 39: 10908-10913 (2000)

Examiner Signature		Date Considered	10/7/03
-----------------------	---	--------------------	---------

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)		
EXAMINER INITIALS		CITATION
	D43	Kenney et al., Mutation Typing Using Electrophoresis and Gel-Immobilized Acrydite Probes, Biotechniques 25: 516-521 (1998)
	D44	Knudsen and Nielsen, Antisense Properties of Duplex- and Triplex-Forming PNAs, Nucl. Acids Res. 24(3): 494-500 (1996)
	D45	Koster et al., Tetrahedron Lett. 24:747-750 (1983)
	D46	Koysynkina et al., Tetrahedron Lett. 35:5173-5176 (1994)
	D47	Kuwahara et al., Synthesis of Oxy-Peptide Nucleic Acids with Mixed Sequences, Nucleic Acids Symposium Series 42: 31-32 (1999)
	D48	Lohse et al., Double Duplex Invasion by Peptide Nucleic Acid: A General Principle for Sequence-Specific Targeting of Double-Stranded DNA, Proc. Natl. Acad. Sci. 96(21): 11804-11808 (1999)
	D49	Mayfield and Corey, Automated Synthesis of Peptide Nucleic Acids and Peptide Nucleic Acid-Peptide Conjugates, Analytical Biochemistry 268: 401-404 (1999)
	D50	McCollum and Andrus, Tetrahedron Lett. 32:4069-4072 (1991)
	D51	Mollegaard et al., PNA/DNA Strand Displacement Loops as Artificial Transcription Promoters, Proc. Natl. Acad. Sci. 91: 3892-3895 (1994)
	D52	Nielsen et al., Sequence-Selective Recognition of DNA by Strand Displacement with a Thymine-Substituted Polyamide, Science 254: 1497-1500 (1991)
	D53	Nielsen, Applications of Peptide Nucleic Acids, Current Opinion in Biotechnology 10:71-75 (1999)
	D54	Nielsen, Antisense Properties of Peptide Nucleic Acid, Methods in Enzymology 313: 156-164 (1999)
	D55	Orum et al., Nucl. Acids Res. 21:5332-5336 (1993)
	D56	Orum et al., Sequence-Specific Purification of Nucleic Acids by PNA-Controlled Hybrid Selection, Biotechniques 19(3): 472-480 (1995)
	D57	Pain et al., Cells Tissues Organs 165:212-219 (1999)
	D58	Proudnikov et al., Immobilization of DNA in Poly Acrylamide Gel for the Manufacture of DNA and DNA-Oligonucleotide Microchips, Analytical Biochemistry 259: 34-41 (1998)

Examiner Signature		Date Considered	10/2/03
-----------------------	---	--------------------	---------

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)		
EXAMINER INITIALS		CITATION
	D59	Rehman et al., Immobilization of Acrylamide-modified Oligonucleotides by Co-Polymerization, Nucl. Acids Res. 27(2): 649-655 (1999)
	D60	Sambrook et al., Molecular Cloning: A Laboratory Manual, 2 nd edition, Cold Spring Harbor Press, Cold Spring Harbor, N.Y. (1989)
	D61	Sandler and Karo, Polymer Synthesis Vol. 1, Academic Press (1992)
	D62	Sandler and Karo, Polymer Synthesis Vol. 2, Academic Press (1994)
	D63	Sproat et al., Nucl. Acids Res. 14:1811-1824 (1986)
	D64	Sugimoto et al., Comparison of Thermodynamic Stabilities between PNA/DNA Hybrid Duplexes and DNA/DNA Duplexes, Nucleic Acids Symposium Series 42: 93-94 (1999)
	D65	Sugimoto et al., Positional Effect of Single Bulge Nucleotide on PNA/DNA Hybrid Stability, Nucleic Acids Symposium Series 42: 95-96 (1999)
	D66	Takeuchi et al., Chem. Pharm. Bull. 22:832-840 (1974)
	D67	van der Laan et al., An Approach Towards the Synthesis of Oligomers Containing a N-2-Hydroxyethyl-aminomethylphosphonate Backbone: A Novel PNA Analogue, <i>Tetrahedron Lett.</i> 37:7857-7860 (1996)
	D68	von Wintzingerode et al., PNA-Mediated PCR Clamping as a Useful Supplement in the Determination of Microbial Diversity, <i>Applied and Env. Microbiology</i> 66(2): 549-557 (2000)
	D69	Wang et al., PNA Binding-Mediated Induction of Human γ -globin Gene Expression, Nucl. Acids Res. 27(13): 2806-2813 (1999)
	D70	Will et al., The Synthesis of Polyamide Nucleic Acids using a Novel Monomethoxytrityl Protecting-Group Strategy, <i>Tetrahedron Lett.</i> 51:12069-12082 (1995)
	D71	Zhong et al., Detection of Apolipoprotein B mRNA Editing by PNA mediated PCR Clamping, <i>Biochem. and Biophys. Res. Comm.</i> 259: 311-313 (1999)
	D72	Advertisement for 'mVader', <i>Biotechniques</i> 28 (4): (2000)

Examiner Signature		Date Considered	10/7/03
-----------------------	---	--------------------	---------

**INFORMATION DISCLOSURE
STATEMENT
BY APPLICANT**
(Use several sheets if necessary.)

RECEIVED

TECH. CL. 11-1-02

Docket Number: AM-00302.P.1.1-US
Patent Number: 10 072,975

Applicant: Efimov et al.

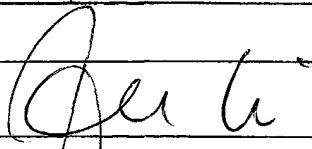
Filing Date: February 9, 2002
Group Art Unit: 1651

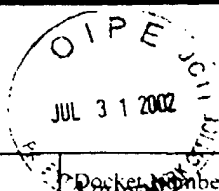
U.S. PATENT DOCUMENTS							
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB-CLASS	FILING DATE IF APPROPRIATE
<i>Al</i>	P1	5,760,201	6 2 98	Glazer <i>et al.</i>			
	P2	5,783,687	7 21 98	Glazer <i>et al.</i>			
	P3	6,054,272	4 25 00	Glazer <i>et al.</i>			
	P4	6,180,767	1 30 01	Wickstrom <i>et al.</i>			
	P5	6,232,066	5 15 01	Felder <i>et al.</i>			
	P6	6,280,946	8/28/01	Hyldig-Nielsen <i>et al.</i>			
	P7	6,312,956	11/6/01	Lane			
<i>Ma</i>	P8	6,326,479	12/4/01	Gildea <i>et al.</i>			

FOREIGN PATENT DOCUMENTS								
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	Translation	
							YES	NO
	F1	WO 99/60156	11/25/99					
	F2	WO 00/34521	6/15/00					
	F3	WO 01/01144	1/4/01					
	F4	WO 01/38565	5/31/01					
	F5	WO 01/68673	9/20/01					

Examiner Signature	<i>Joe Gu</i>	Date Considered	10/7/03
--------------------	---------------	-----------------	---------

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)		
EXAMINER INITIALS		CITATION
	D1	Bergmann <i>et al.</i> , Solid Phase Synthesis of Directly Linked PNA-DNA-Hybrids, <i>Tetrahedron Letters</i> 36: 6823-6826 (1995).
	D2	De Backer <i>et al.</i> , An antisense-based functional genomics approach for identification of genes critical for growth of <i>Candida albicans</i> , <i>Nat. Biotechnol.</i> 19: 235-41 (2001).
	D3	Efimov <i>et al.</i> , PNA-Related Oligonucleotide Mimics and their Evaluation for Nucleic Acid Hybridization Studies and Analysis, <i>Nucleosides, Nucleotides & Nucleic Acids</i> 20(4-7): 419-428 (2001).
	D4	Eriksson <i>et al.</i> , Cell Permeabilization and Uptake of Antisense Peptide-Peptide Nucleic Acid (PNA) into <i>Escherichia coli</i> , <i>J. Biol. Chem</i> 277: 7144-7147 (2002).
	D5	Good <i>et al.</i> , Antisense inhibition of gene expression in bacteria by PNA targeted to mRNA, <i>Nat. Biotechnol.</i> 16: 355-358 (1998).
	D6	Good <i>et al.</i> , Antisense PNA effects in <i>Escherichia coli</i> are limited by the outer-membranes LPS layer, <i>Microbiology</i> 146: 2665-2670 (2000).
	D7	Nasevicius <i>et al.</i> , Effective targeted gene 'knockdown' in zebrafish, <i>Nat. Genet.</i> 26: 216-220 (2000).
	D8	Phelan <i>et al.</i> , Messenger RNA Isolation Using Novel PNA Analogues, <i>Nucleosides, Nucleotides & Nucleic Acids</i> 20(4-7): 1107-1111 (2001).
	D9	Rye <i>et al.</i> , stable fluorescent complexes of double-stranded DNA with bis-intercalating asymmetric cyanine dyes: properties and applications, <i>Nucl. Acids Res.</i> 20: 2803-2812 (1992).
	D10	Sazani <i>et al.</i> , Detection of tumor mutations in the presences of excess amounts of normal DNA, <i>Nat. Biotechnol.</i> 19: 186-189 (2001).
	D11	Sun <i>et al.</i> , Detection of tumor mutations in the presence of excess amounts of normal DNA, <i>Nat. Biotechnol.</i> 19: 186-189 (2002).
	D12	Tomac <i>et al.</i> , Ionic Effects on the Stability and Conformation of Peptide Nucleic Acid Complexes, <i>J. Am. Chem. Soc.</i> 118: 5544-5552 (1996).
	D13	Weiler <i>et al.</i> , Hybridisation based DNA screening on peptide nucleic acid (PNA) oligomer arrays, <i>Nucl. Acids Res.</i> 25: 2793-2799 (1997).
	D14	Wittung <i>et al.</i> , Interactions of DNA binding ligands with PNA - DNA hybrids, <i>Nucl. Acids. Res.</i> 22: 5371-5377 (1994).
	D15	www.activemotif.com products mol., January 31, 2002.
	D16	advertisements, <i>Science</i> 296: 1780 (June 2002).

Examiner Signature		Date Considered	10/7/03
-----------------------	---	--------------------	---------



RECEIVED

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use several sheets if necessary)	Docket Number: A-00102.P.1.1-US	Patent Number: 10 072,975
	Applicant: Efimov et al.	
	Filing Date: February 9, 2002	Group Art Unit: 1651

U.S. PATENT DOCUMENTS							
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB- CLASS	FILING DATE IF APPROPRIATE
	P1						

FOREIGN PATENT DOCUMENTS								
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	Translation	
							YES	NO
	F1							

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)		
EXAMINER INITIALS		CITATION
	D1	Efimov et al., Russian Journal of Bioorganic Chemistry 24(9) 618-630 (1998) (Translated from Bioorganicheskaya Khimiya 24(9):696-709 (1998))
	D2	Efimov et al., Bioorganicheskaya Khimiya 24(9):696-709 (1998).

Examiner Signature		Date Considered	10/7/03
-----------------------	---	--------------------	---------